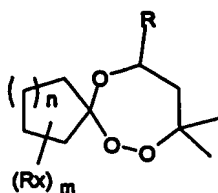


Claims

1. A process for the preparation of lactones by decomposition of a 1,2,4-trioxepane according to formula (I)



(I)

wherein

R is H or CH₃;

n is 1-14;

- 10 Rx independently is any substituent on the ring structure, including substituents which form bi- or tricyclic structures; and
m is 0-34.

2. A process for the preparation of lactones according to claim 1 comprising the steps of
- 15 (a) heating a small amount of a suitable medium to the temperature at which the 1,2,4-trioxepane decomposes, and
(b) subsequently adding said 1,2,4-trioxepane to the preheated amount of medium while controlling the reaction temperature.
- 20 3. A process for the preparation of lactones according to claim 2 wherein the medium is a linear or branched alkane solvent, preferably selected from the group consisting of nonane, decane, undecane, dodecane, paraffin oil, Isopar[®] solvents, and Shellisol[®] solvents.
- 25 4. A process for the preparation of lactones according to claim 3 wherein the solvent comprises an Isopar[®] solvent, preferably Isopar[®] H.

5. A process for the preparation of lactones according to any one of the preceding claims wherein the small amount of medium is between 0.01 and 1.5 parts by weight of medium per part of 1,2,4-trioxepane starting material.
6. A process for the preparation of lactones according to any one of the preceding claims wherein the 1,2,4-trioxepane is added in the pure form if it is a liquid at room temperature, or in the molten state or dissolved in a minimum amount of a suitable solvent if it is a solid at room temperature.
7. A process for the preparation of lactones according to any one of the preceding claims wherein the 1,2,4-trioxepane is a reaction product of hexyleneglycol hydroperoxide or isopreneglycol hydroperoxide with a compound selected from the group consisting of cyclobutanone, cyclopentanone, cyclohexanone, cycloheptanone, cyclooctanone, cyclononanone, cyclodecanone, cycloundecanone, cyclododecanone, cyclotridecanone, cyclotetradecanone, cyclopentadecanone, cyclohexadecanone, cycloheptadecanone, cyclooctadecanone, camphor, norbornanone, ethyl 2-oxocyclopentylacetate, ethyl 6-(2-oxocyclopentyl)hexanoate, 3-methylcyclopentanone, fenchone, 2-methylcyclopentanone, methyl 2-cyclopentanonecarboxylate, 4-*t*-butylcyclohexanone, menthone, 2-methylcyclohexanone, 3-methylcyclohexanone, 2-phenylcyclohexanone, 3,3,5,5-tetramethylcyclohexanone, 2,6-dimethylcyclohexanone, bicyclo[3.2.1]octan-2-one, 2 *B*-cyanoethylcyclohexanone, 4-ethylcyclohexanone, bicyclo[3.3.1]nonan-9-one, dihydrocarvone, 2-*t*-butylcyclohexanone, 3,3,5-trimethylcyclohexanone, 6-carbethoxy-2,6,6-trimethylcyclohexanone, 2,6,6-trimethylcyclohexanone, 2-ethoxycyclo-

hexanone, 2,2,6,6-tetramethylcyclohexanone, 3-methylene-2-norbornanone, pulegone, and ethyl 2-oxo-1-cyclooctanecarboxylate.

- 5 8. A process for the preparation of lactones according to any one of the preceding claims wherein the reaction temperature is maintained between 100 and 300°C.